

A BRIEF EDUCATIONAL INTERVENTION TO IMPROVE CULTURALLY
APPROPRIATE CARE IN HISPANIC ADULTS WITH
TYPE 2 DIABETES LIVING IN TEXAS

by

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As members of the DNP Project Committee, we certify that we have read the DNP Project prepared by Gabriela Cassandra Diaz entitled A Brief Educational Intervention to Improve Culturally Appropriate Care in Hispanic Adults with Type 2 Diabetes Living in Texas and recommend that it be accepted as fulfilling the DNP Project requirement for the Degree of Doctor of Nursing Practice.



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Final approval and acceptance of this DNP Project is contingent upon the candidate's submission of the final copies of the DNP Project to the Graduate College.

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DEDICATION

I would like to dedicate this paper to all my Hispanic patients who passed away from the complications that arose from type 2 diabetes, and those who continue to suffer. More research needs to be conducted to help with cultural education toward Hispanics with type 2 diabetes.

Thank You!

TABLE OF CONTENTS

LIST OF FIGURES	8
LIST OF TABLES	9
ABSTRACT	10
INTRODUCTION	11
Background	12
Overview	12
Risk Factors	13
Diagnosis	13
Complications	14
Economy	16
Health Disparities	17
Socioeconomic Factors	17
Lifestyle Behaviors	19
Social Environment	19
Access to Preventative Healthcare Services	20
Evidence-Based Recommendations	21
Cultural Considerations	22
Local Problem	24
Problem Statement	27
Purpose	27
Study Question	27
THEORETICAL FRAMEWORK AND SYNTHESIS OF EVIDENCE	28
Theoretical Framework	28
Maintenance and Preservation	29
Negotiation and Accommodation	30
Restructuring and Patterning	31
Synthesis of Evidence	32
Culture Tailored Education	33

TABLE OF CONTENTS – *Continued*

Diet Recommendations	33
Herbal Remedies	35
Health Literacy and Literacy Barriers	36
Myths	37
Call for Change	38
METHODOLOGY	39
Design	39
Setting	39
Sample	40
Intervention	41
Data Collection	42
Pre-test	43
Post-test	44
Data Collection Process	44
Analysis	45
Dissemination	46
Ethical Considerations	46
Autonomy	47
Beneficence	47
Justice	47
RESULTS	48
Sample Demographic Characteristics	48
Knowledge and Practice	49
Participation Satisfaction	51
DISCUSSION	52
Sample	53
Knowledge and Practice	54
Satisfaction	56

TABLE OF CONTENTS – *Continued*

Strengths and Limitations.....	57
Conclusions and Recommendations.....	58
APPENDIX A: THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL LETTER	61
APPENDIX B: OUTLINE FOR WEBINAR.....	64
APPENDIX C: PRE-TEST	69
APPENDIX D: POST-TEST	73
APPENDIX E: WELCOME E-MAIL	77
APPENDIX F: REMINDER E-MAIL.....	79
APPENDIX G: LETTER OF INTENTION	81
REFERENCES	83

LIST OF FIGURES

<i>FIGURE 1.</i>	Leininger's culture care sunrise model.	29
<i>FIGURE 2.</i>	Timeline of project.....	45
<i>FIGURE 3.</i>	Knowledge pre-test and post-test comparison.	50

LIST OF TABLES

TABLE 1.	<i>Demographic characteristics of study participants (n=45).</i>	48
TABLE 2.	<i>Content delivery scores.</i>	51

ABSTRACT

The purpose of this project was to utilize an online asynchronous educational webinar to increase the Texas Nurse Practitioners Association's providers' knowledge of teaching strategies and culturally appropriate education for Hispanic patients with type 2 diabetes. The incidence of type 2 diabetes in the Hispanic population in Texas is increasing with the Hispanic population being diagnosed disproportionately more. This is a cause for concern across the state of Texas due to its significant Hispanic population. Type 2 diabetes; if poorly managed, can have negative outcomes for the patient's quality of life as well as a financial impact on the economy. Unsuccessfully managed glucose levels may result in debilitating outcomes, such as renal failure, stroke, loss of limbs, blindness, nerve damage, and possibly early death. The sample included 40 nurse practitioners' who were members of the Texas Nurse Practitioner Association. This project included a pre-test and a post-test to evaluate the effectiveness and satisfaction of the webinar. This project ran for three weeks, during which time one reminder e-mail was distributed. Data was then compiled and analyzed using descriptive statistics. The results of the comparison showed that the presentation helped nurse practitioners by providing new cultural knowledge. There were barriers in the questionnaires because the pre-test and post-test were not linked, so there was no way to determine the knowledge learned by each individual participant. There were also technical problems regarding sound quality and speed of presentation. This study could serve as a foundation for further research on improving cultural education for providers who educate Hispanics with type 2 diabetes in Texas. Aggregate data and recommendations were given to the Texas Nurse Practitioner Association.

INTRODUCTION

Diabetes is classified as a chronic disease. Without proper management, it can progress in patients, causing multiple health complications, frequent hospitalizations and possibly premature death. According to the Centers for Disease Control (CDC) and Prevention, over 30 million Americans have been diagnosed with type 2 diabetes and over seven million Americans remain undiagnosed (National Diabetes Statistics Report [NDSR], 2017). The incidence of type 2 diabetes is increasing, with significant health disparities throughout the United States. According to the National Health Interview Survey, the rate of developing type 2 diabetes is higher in Hispanics (around 11%) compared to the rate among non-Hispanic whites (around 7%) (Cusi & Ocampo, 2011). However, there is additional variability within the Hispanic population, with Mexican Americans among the most affected communities at 13% (Schneiderman et al., 2014). The incidence of Hispanics with type 2 diabetes has been gradually escalating, with 50% of Hispanic adults projected to develop type 2 diabetes in their lifetime (CDC, 2017). Type 2 diabetes is increasing throughout the United States, with significant health disparities. In the United States, there are around 50 million people with type 2 diabetes, and by 2020 that number is estimated to be around 60 million people (Drago, 2012). This projection is particularly important for Texas, which borders Mexico and has a significant proportion of Hispanic residents. Not surprisingly, the incidence of diabetes in Texas is around 11%, which is higher than the national average of 9% (Texas Health and Human Services [THHS], 2015). To improve the health status of Hispanic adults diagnosed with type 2 diabetes, as well as decrease complications suffered from poorly managed glucose levels, culturally appropriate care must be provided. Diabetic education, along with requisite knowledge about it, has been shown to help

manage glucose levels; long-term, it has also been shown to minimize the chances of developing complications (Nazar, Bojerenu, Safdar, & Marwat, 2016). Nurse practitioners are a crucial part for diabetes education and management. The purpose of this project was to utilize an online asynchronous educational webinar to increase the Texas Nurse Practitioners Associations provider's knowledge of teaching strategies and culturally appropriate education for Hispanic patients with type 2 diabetes.

Background

Overview

Diabetes, or diabetes mellitus, is a metabolic disorder that, in the absence of proper treatment, can not only cause many complications but can also increase the chances for morbidity and mortality. Diabetes may be classified as two main types: type 1 and type 2. Among those diagnosed, 5-10% have type 1 and 90-95% have type 2 diabetes (NDSR, 2017). The focus of this paper is on the latter type. Although type 2 diabetes is a chronic disease, it is modifiable. The American Diabetes Association (ADA) described diabetes mellitus as a systemic disease that affects the metabolism of glucose, makes insulin secretion difficult, and builds up a resistance to insulin in the peripheral tissues (ADA, 2004). Diabetes is thought to arise from the cumulative effect of chronic inflammation, oxidative stress, and tissues' resistance to insulin. These conditions are commonly accompanied by arterial hypertension (Cheung & Li, 2012). The beta cells in the pancreas secrete a hormone called insulin that helps with the regulation of glucose. With beta cell destruction, the body can no longer store or release insulin, which results in hyperglycemia (Brashers, Jones, & Huether, 2014). Suffering from hyperglycemia for an extended period can ultimately have a deleterious effect on multiple organ systems.

Risk Factors

Diabetes is a chronic, non-communicable disease that can develop from genetics or environmental risk factors. In type 2 diabetes, some risk factors are modifiable, and others are not. Ethnicity is considered a non-modifiable risk factor and diabetes has an increased prevalence in Hispanics, African Americans and Pacific Islanders (National Institute of Diabetes and Digestive and Kidney Disease [NIDDKD], 2016a). Genetics and age are also non-modifiable risk factors for the development of type 2 diabetes, with diagnosis predominately made after the age of 40 (Brashers et al., 2014). The preventable (i.e., modifiable) risk factors, are more prevalent and include obesity, hypertension, a sedentary lifestyle, low levels of high-density lipoprotein and hypertriglyceridemia (NIDDKD, 2016a). With proper education, diabetic patients can improve their modifiable risk factors, which can result in a decreased chance for development of long-term complications.

Diagnosis

The most common laboratory tests for the diagnosis of type 2 diabetes are fasting plasma glucose (FPG) and hemoglobin A1C (HgbA1C). FPG measures glucose levels after not eating or drinking for at least eight hours; a glucose level greater than or equal to 126 milligrams per deciliter leads to a diagnosis of type 2 diabetes (NIDDKD, 2016a). HgbA1C measures the average blood glucose over the past two to three months; type 2 diabetes is diagnosed if the HgbA1C is greater than or equal to 6.5% (ADA, 2016). One exam is not definitive, so two different blood tests are required to confirm a diagnosis. An alternate diagnosis for type 2 diabetes is if the patient displays classic diabetic symptoms (i.e., hyperglycemia or hyperglycemic crisis) along with an elevated random plasma glucose level (Brashers et al.,

2014). To prevent the numerous complications that can arise from prolonged hyperglycemia, screening for diabetes is an essential factor in primary care.

Complications

Diabetes is a complex disease that affects multiple organ systems. Acute difficulties that arise from type 2 diabetes include the risk of hospitalization due to dysglycemia and other related complications. Through early diagnosis, glycemic management, screening for chronic complications, and immunizations against influenza and pneumococcus, hospitalizations can be reduced (Al-Adsani & Abdulla, 2015). A chronically elevated glucose level increases the risk of mortality.

Ineffectively managed diabetes can lead to chronic and life-threatening conditions. Poorly managed glucose levels increase the possibility of developing secondary complications, which range from acute, to life-threatening (Nickerson & Dutta, 2012). Ineffective glucose management can result in microvascular and macrovascular comorbid conditions (World Health Organization [WHO], 2018). Microvascular problems can arise in the capillaries. These include retinopathy, nephropathy, and diabetic neuropathy. Diabetic retinopathy is the most common microvascular complication; damage to the blood vessels occurs through consistently elevated glucose levels, which harms not only the retina but the vessels in the eye (WHO, 2018).

Hyperglycemia and diabetes are associated with an increased risk for developing cataracts and glaucoma (Brashers et al., 2014). In 2010, diabetic retinopathy occurred in about seven million people; the National Eye Institute (NEI) has projected this number to double by 2050 (NEI, n.d.). Hispanic Americans have a higher risk for developing diabetic retinopathy, with a projected increase from around one million in 2010 to five million in 2050 (NEI, n.d.). Another major

microvascular complication, caused by poorly managed glucose levels, is renal failure, which is termed diabetic nephropathy (WHO, 2018). Many factors, including chronic hyperglycemia, hyperperfusion, systemic hypertension, oxidative stress, and increased glomerular pressure, contribute to the development of diabetic nephropathy (Brashers et al., 2014). Renal involvement in diabetes accelerates multiple organ insults, leading to increased comorbid conditions and mortality (Shahbazian & Rezaii, 2013). The last major microvascular complication is diabetic neuropathy, the severity of which is proportional to length of having the disease (Chawla, Chawla, & Jaggi, 2016). Because nerves do not require insulin for glucose absorption, they are prone to amplified damage from chronic hyperglycemia (Brashers et al., 2014). The disturbance to the nerves causes decreased sensation and numbness of extremities, which can progress to blisters and sores. Infection can develop from the ulcers and, with the loss of feeling, can result in the loss of peripheral extremities (NIDDKD, 2018). The complications listed above can be decelerated or prevented through proper glucose management.

Stroke, peripheral arterial disease (PAD), and coronary artery disease (CAD) are all categorized as macrovascular complications. The above-listed complications are a result of hyperglycemia that causes lesions in large and medium-sized arteries, leading to atherosclerosis (Brashers et al., 2014). Microvascular problems affect the internal lining of arterial walls, leading to hardening and narrowing when in the presence of chronic hyperglycemia (ADA, 2008). This damage ultimately leads a decreased blood flow that affects multiple organs, including the: a) the heart, which can progress to a heart attack; b) the brain, which can lead to stroke; or, c) extremities, which can progress to pain and decreased healing of infections (WHO, 2018). PAD is atherosclerosis of the lower extremities and can cause long-term disability for diabetic patients

(Thiruvoipati, Kielhorn, & Armstrong, 2015). CAD in diabetic patients leads to up to 75% morbidity and mortality in both men and women (Brashers et al., 2014). Stroke is another macrovascular complication that can severely affect quality of life. Compared to people who are free of diabetes, the risk of experiencing a cerebrovascular accident is two to four times greater among people diagnosed with diabetes (National Stroke Association, 2013). In the United States, diabetes is one of the 10 leading causes of death, with 65% of the cases related to stroke (Chen, Ovbiagele, & Feng, 2016). Management of glucose levels and treatment of any underlying hypertension, or hyperlipidemia aids in the prevention of complications. An increased propensity for infection is another complication that results from chronic and sustained episodes of hyperglycemia. There are multiple reasons for infections, including delayed wound healing, suppression of the immune response, hypoxia, and impaired senses (Brashers et al., 2014). Delayed wound healing and suppressed immune responses increase the chance for infection and reduce innate and adaptive immune responses respectively (Brashers et al., 2014). Type 2 diabetics have an increased risk of infection, so caution needs to be taken to reduce morbidity and mortality.

Economy

Diabetes is not just destructive to the diagnosed individual; it also causes unnecessary stress on the economy. In the United States, in 2007, treating diabetes cost about \$170 billion, an amount that had drastically increased to \$245 billion by 2012, a 41% increase over five years (Hirsch & Morello, 2017). An escalating amount of money is being spent in the treatment of a preventable disease.

In 2007, annual medical expenses for a person with diabetes was \$11,000. In comparison, the yearly expenses for a person without diabetes was \$2,000 (Herman, 2011). Diabetes treatment may be broken down into direct and indirect costs. Direct costs include treatment by physicians and, nurses, laboratory costs, and prescription drugs; indirect costs are related to loss of productivity from missed work days as well as morbidity and mortality (Chukwueke & Cordero-MacIntyre, 2010). Another incurred cost originates from individuals who remain undiagnosed; in 2007, the estimated burden was projected to be around \$18 billion (Hirsch & Morello, 2017). There must be effective management of type 2 diabetes to curb this immense economic impact.

Health Disparities

Socioeconomic Factors

There are various socioeconomic challenges that Hispanics in the United States confront. About 9% of the U.S. population have limited English proficiency, of the different minority groups, the largest is Spanish speakers (Detz et al., 2014). Language barriers create problems for patients — such as the lack of understanding of their care plan as well as provider education. In El Paso, Texas, a majority of the population speaks Spanish; this means that bilingual education is the cornerstone to patient education. Most clinics do not have access to interpreters, and others do not provide culturally appropriate care (Betancourt, Carillo, Green, & Maina, 2004). Communication is imperative in everyday life, and it is essential for management of a disease that requires complex education and modifications of patients' lifestyles.

Daily self-care management is necessary in type 2 diabetes due to the complexity of the disease process, which requires that patients follow guidelines in their everyday life (Friis, Vind,

Simmons, & Maindal, 2016). Health literacy skills include: a) the ability to read labels on pill bottles; b) the capability to follow verbal or written instructions; c) the capability to comprehend educational brochures; and, d) the ability to understand appointment information (Bailey et al., 2014). These skills aid the patient in disease management. Providing education that is not only understood but also implemented is necessary; because 90% of Americans have basic or below health literacy, making this an issue for Americans in general (Osborn, Bains, & Egede, 2010). To properly manage diabetes, patients need to understand how to implement their plan of care.

Limited access to insurance continues to be a barrier despite the implementation of the Affordable Care Act (ACA). Many patients who previously had no health care now, have access to it; however, due to other financial responsibilities, they may have to decide between buying medication for the month and other financial obligations such as groceries or mortgage payments (Burge & Schade, 2014). Lack of insurance and income barriers sometimes go hand in hand. Hispanics living in Texas have lower paying jobs than non-Hispanic workers. In Texas, there is an apparent difference between the rich and the poor. Around 20% of all Texas income is dispersed to the top 1% of the population (Economic Policy Institute, 2016). Due to a lack of insurance and people's financial situations, the inability to purchase medication adds to the issue of poorly managed glucose levels.

Barriers to adequate glucose management for Hispanic patients are also related to environmental factors, which include lack of access to healthy food and providers, along with limited transportation in rural areas, or unsafe neighborhoods (Clark & Utz, 2014). Another barrier is predominant among older Mexican Americans, who rely on family members, who are not always available, to provide transportation (Clark & Utz, 2014). Living in areas that are

unsafe or do not have paved roads can also make exercise an obstacle for the Hispanic population (Clark & Utz, 2014). Understanding all these barriers faced by Hispanics with type 2 diabetes, will help the medical community manage their health better.

Lifestyle Behaviors

A limited proportion of the United States population engages in regular physical activity and healthy eating. According to the CDC, about 21% of adults in the United States are succeeding in their efforts to reach the recommended physical exercise guidelines (CDC, 2014). The NIDDKD explains that maintaining a healthy diet, as well as keeping physically active, are essential components to maintaining glucose levels within a target range; these practices also help to promote weight loss, if necessary, in addition to increasing energy levels (NIDDKD, 2016b). Decreased physical activity is predominant throughout the United States, especially among individuals, including many Hispanics who reside in low-income housing or live in areas with incidents of violence, making physical activity an obstacle (Ickes & Sharma, 2012). Other hindrances include lack of time, decreased motivation, or obesity (Ickes & Sharma, 2012). Through education and communication, the provider must help the patient not only to overcome barriers but also to support the patient in making healthier lifestyle choices.

Social Environment

One factor that can either help or hurt Hispanics is strong family values. Hispanics will often place their families' needs before their own; they have a strong sense of family, also defined as *familismo* (Hu, Amirehansi, Wallace, & Letvak, 2013). The family dynamic plays a huge role in Hispanic communities. With multiple tasks such as meal planning or attending doctor appointments, Hispanics will prioritize family needs ahead of their own. With proper

education and understanding, this population can understand that controlled glucose leads to better quality of life; if they focus on being healthy, they can be helpful to their family members for a longer time. The Hispanic notion of family must be incorporated into diabetes education.

Access to Preventative Healthcare Services

Multiple barriers exist in the access to preventative health care services. When trying to access these services, Hispanics with type 2 diabetes face obstacles such as a lack of health insurance, language barriers, and an insufficient understanding of how the health care system is run (Betancourt et al., 2004; Ortega, Rodriguez, & Bustamante, 2015). Hispanics are also less likely than non-Hispanic whites to seek assistance because of confusion about how the system works. They frequently lack a primary care provider and encounter scheduling conflicts due to hectic work schedules and the limited clinic hours available to them (Betancourt et al., 2004). Hispanics typically have low insurance coverage rates due to non-citizen status or low wage employment which does not provide health benefits, along with geographic location and working in rural regions which is long distances from primary care provider (Ortega, Rodriguez, & Bustamante, 2015; Sohn, 2017). Providers might assume non-compliance when there are other issues that hinder them from meeting scheduled appointments. Time constraints and the undocumented status of some Hispanic residents also deter patients from maintaining continuity of care (Betancourt et al., 2004; Ortega, Rodriguez, & Bustamante, 2015). The unfortunate fact is that Hispanic patients are more likely to visit hospital outpatient departments and emergency rooms which is a solution for a current problem but not for long-term management (Betancourt et al., 2004). With early diabetes diagnosis and lifestyle modifications, prevention of the progression of multiple complications can be avoided.

Evidence-Based Recommendations

There are two primary evidence-based recommendation guidelines for managing type 2 diabetes: the ADA and the American Association of Clinical Endocrinologists and American College of Endocrinology (AACE/ACE).

One of the primary goals of diabetes management is the prevention of long-term complications through the management of HgbA1C. The AACE/ACE's recommendation for healthy adults is to maintain an HgbA1C of less than 6.5% (Garber et al., 2018). The ADA's recommendations for non-pregnant adults with few comorbid conditions and a longer life expectancy than those with multiple co-morbid conditions, is to maintain a HgbA1c of 6.5% and all others a target HgbA1C of 7% (ADA, 2018a). The AACE/ACE's caveat is that patients with a severe history of hypoglycemia, renal disease or extensive comorbidities should have an HgbA1C goal greater than 6.5% (Garber et al., 2018).

The current clinical practice guidelines of the ADA recommend initial measurement of the HgbA1C every three months, until it is controlled, then transitioning to twice a year once the patient has well-controlled levels (ADA, 2018a).

Lifestyle modifications are necessary to help control type 2 diabetes; they include exercise, weight loss, and adopting healthy eating habits. The AACE/ACE gives these recommendations for a healthy lifestyle: losing weight, regular exercise, nutrition therapy, sleep, behavioral support, and smoking cessation (Garber et al., 2018). The ADA is more specific with suggestions such as diabetes self-management-education (DSME) and support, which have been shown not only to increase patient knowledge but also to produce better self-care behaviors

(Beck et al., 2017). The guidelines state that DSME should be ordered upon diagnosis, annually, with complicating factors and with transitions in care (ADA, 2018b).

Initiation of lifestyle modifications is the first step in type 2 diabetes management, and if glucose levels remain uncontrolled, medications can then be started. The AACE/ACE and ADA guidelines recommend Metformin as the first drug of choice. Metformin has a low risk for hypoglycemia, and it includes weight loss properties with doses around 2000 or 2500 mg a day (Garber et al., 2018; ADA, 2018c). One contraindication to Metformin use is decreased kidney function; measuring kidney function is pertinent before administration of this medication (Garber et al., 2018). Metformin also has a propensity to cause vitamin B12 deficiency (ADA, 2018c). Additional medications ranging from orals to injectables, including insulin, are also recommended because they, act on various elements of insulin resistance and acting on various elements of the insulin resistance and glycemic control. However, lifestyle modification remains a key step and is the focus of this project. Vigilant monitoring by the primary care provider must be implemented when managing glucose levels. Providing culturally appropriate education is important to improve patients' health literacy as well as to provide safe and effective diabetes care.

Cultural Considerations

Culture, which includes beliefs and values, is an important factor for the management of type 2 diabetes. Madeline Leininger (1991) defined cultural competence as the skill to value, understand, and interact with other people's cultures and belief systems that are different from one's own, when providing patient care. Providing cultural care includes understanding patients' language, cultural values, beliefs, religion, educational factors, and social factors (Pereira de

Melo, 2013). These factors influence the patient's ability to manage any disease process. The Hispanic population is increasing, making cultural care vital. The percentage of Hispanics in the United States is projected to increase to 30% by 2050, from 16% in 2013 (Juckett, 2013). Cultural competence is crucial, especially due to the increased incidence of Hispanics with type 2 diabetes.

Language, customs, beliefs, and values play a role in culture, and understanding Hispanic culture is necessary to be able to provide culturally competent care (Clark & Utz, 2014). Religion plays a role in food preparations; in the typical Hispanic household, meals are prepared by the matriarch — these meals tend to be high in carbohydrates and sugars (Gonzalez-Zacarias et al., 2016). Traditional Hispanic food is not only high in fat but high in calories and carbohydrates, which, contributes to unhealthy choices in everyday living. Conventional Hispanic food makes obesity a considerable concern for the Hispanic population. The prevalence of obesity is 1.2 times higher in the Hispanic population than in the non-Hispanic white population (United States Department of Health & Human Services [DHHS], 2017). Hispanics who migrated from Mexico may not be open to giving up their traditional diet; however, first- and second-generation Hispanics are not as stringent with dietary traditions (Guendelman & Abrams, 1995). Communication is essential to clarify nutritional preferences. Because family is a crucial aspect of Hispanic culture, it is imperative that the practitioner include family members in medical management (Clark & Utz, 2014). Evans et al. (2011) study concluded that meal plans that included shopping along with meal preparation would help Hispanics with their food preparation. Hispanic beliefs also play a role in understanding diseases. Many Hispanics believe that non-contributing factors, such as emotional distress, anger, or fright can lead to illnesses

(Clark & Utz, 2014; Daniulaityte, Garcia de Alba Garcia, & Salcedo Rocha, 2008). With an understanding of culture, effective education about glucose management can commence.

Local Problem

Texas, a border state to Mexico, is home to many Hispanic adults with type 2 diabetes. Across the United States, Hispanics constitute a minority group that is increasing rapidly (Benavides-Baello & Brown, 2016). This increase has implications for diabetes rates and the need for culturally appropriate care. Texas is one of the most populous states and, covers a significant amount of land; Hispanics are the majority population, in part because Mexico is across the southern border of Texas. Currently, Hispanics consist of 39.1% of the Texas population, and this percentage is escalating (DHHS, 2017). Even though they make up the most significant percentage of the population, Hispanics are still considered a minority and are disproportionately affected by diabetes. In Texas, the Hispanic population diagnosed with type 2 diabetes was around 12%, compared to 10% of non-Hispanic whites (THHS, 2015).

Texas contains a vast amount of land and has both urban and rural areas. The U.S. Census Bureau has two categories for urban areas: urbanized areas, which have 50,000 or more people and urban clusters, which have less than 50,000 but more than 2,000 people (Health Resources & Services Administration [HRSA], 2017). Texas is home to around 82 metropolitan or urban counties and 172 rural counties (Texas Demographic Center, 2017). In the United States, 20% of the population lives in rural areas with only 9% of physicians practicing in these areas (Rabinowitz & Paynter, 2002). The U.S. Census Bureau does not provide a precise definition of “rural;” however, it is simply that which is not urban (HRSA, 2017).

Some of these rural regions are home to *colonias*. These are low-income communities that lack water, sewerage, electricity, and paved streets (Dietz, 2008). These conditions make it difficult for inhabitants to have access to necessities such as health care providers and healthy food along with proper diabetes management (Dietz, 2008). Texas is home to over 2,300 colonias with a population of around 450,000 people (Dietz, 2008). The shortage of primary care providers in Texas in colonias and barriers to accessing “basic” necessities both complicate type 2 diabetes management.

One of the largest cities that is home to Hispanic Texans is El Paso — a border city that covers area greater than 1,000 square miles (City of El Paso Department of Public Health [CEPDPH], 2014). This city’s population is quite diverse and here is where I practiced as a nurse in the Intensive Care Unit at University Medical Center. I left work to pursue higher education for the improvement of health in my community by attending the University of Arizona as a Family Nurse Practitioner student. I worked with many Hispanic patients who suffered from preventable complications due to poorly managed type 2 diabetes. The population of this city, according to the El Paso County Profile, was estimated at 837,918; of this number, 82.2% are Hispanic (Texas Association of Counties, 2016). This statistic is significant because Hispanics are more susceptible to type 2 diabetes than non-Hispanic whites. In 2010, in El Paso County, over 12% of residents were diagnosed with type 2 diabetes, which represents a 15% increase between 2007 and -2010 (CEPDPH, 2014). With the size of the state and its proportion of Hispanics, glycemic management is pertinent for the Hispanic population.

There is a shortage of primary care providers across Texas, where primary providers include nurse practitioners, medical doctors, physician assistants and doctors of osteopathy.

More than half of the counties do not have enough primary care physicians (Texas Council for Developmental Disabilities, 2012). This shortage, which is already worse than national shortages, is expected to worsen (Robert Graham Center, n.d.). Nurse practitioner's play an important role in improving access to primary care services. In 2017, there were 21,142 primary care physicians in Texas (THHS, 2018). This number, along with the number of nurse practitioners, has increased; in 2014 there were 10,936 practicing nurse practitioner's in Texas (THHS, 2018). Texans also have access to a range of private healthcare centers, academic health centers, military health care centers, non-profit healthcare organizations, specialty clinics, and rural health clinics across the state, though access is particularly limited in rural areas.

Nurse practitioners are health care providers who emphasize health promotion, disease prevention, and health education (American Association of Nurse Practitioners [AANP], 2018). Patients with type 2 diabetes can benefit from receiving preventative education from a nurse practitioner; they can also be referred to other appropriate providers if more information or treatments are required. The combined efforts of both groups of providers could aid this population. The Texas Nurse Practitioner Association is one of the largest professional nurse practitioner groups for Texas Nurse Practitioner's. There are over 4,500 members, including individuals with a range of specialties. The population targeted for this project were members of the Texas Nurse Practitioner Association. A project will be completed to help improve culturally appropriate education for Hispanic patients with type 2 diabetes among their nurse practitioner members. This project was developed in collaboration with a lead administrator of the University of Arizona for the Texas Nurse Practitioner Association.

Problem Statement

The diabetes epidemic has been steadily growing, with Hispanic patients disproportionately affected by type 2 diabetes. In Texas, there is a significant proportion of Hispanics with type 2 diabetes. There have been persistent health problems among Hispanic patients, which is why culturally appropriate diabetes education is essential. Nurse practitioners across Texas play a crucial role in caring for these patients; there is, however, a need for more culturally competent care. Nurse practitioners are unique health care providers in that they emphasize health promotion, disease prevention, and health education (AANP, 2018). Providing culturally appropriate educational strategies for these nurse practitioners who care for Hispanic diabetic adults is critical in helping to improve not only their quality of life but also in helping to prevent morbidity and mortality.

Purpose

The purpose of this project was to utilize an online asynchronous educational webinar to increase Texas Nurse Practitioner Associations providers' knowledge of teaching strategies and culturally appropriate education for Hispanic patients with type 2 diabetes. For purposes of this paper, the term Hispanic will be used when discussing people from a Spanish-speaking country or who are of Latin American descent.

Study Question

What is the effectiveness of and satisfaction with a brief educational intervention to improve knowledge of culturally appropriate education for Hispanic patients with type 2 diabetes among Nurse Practitioner members of the Texas Nurse Practitioner Association?

THEORETICAL FRAMEWORK AND SYNTHESIS OF EVIDENCE

Theoretical Framework

The Leininger Culture Care Theory (Leininger, 1996) served as the framework for this project. This theory was selected because it shows how vital it is to know, understand, and incorporate different cultures into the care that is provided for patients. Leininger's model emphasizes why it is necessary to incorporate cultural awareness to have positive healthcare outcomes. This model is not based on one culture but is interchangeable, and it can be utilized when providing cultural education to Hispanic patients with type 2 diabetes. Leininger (1996) emphasized the importance of caring and noted that "caring can happen without curing but curing cannot happen without caring" (n.p.). This model helps to explain the importance of culture care through the understanding and utilization of multiple factors. One key factor includes understanding cultural values and lifestyles in the Hispanic population. Food choices are a barrier faced by Hispanic patients, which hinders achievement of controlled glucose levels.

The model Leininger (1996) created helps to explain the importance of culture care through understanding and utilization of multiple factors. There are two parts to this model. The first shows how the provider needs to address multiple components when providing care to include: "religious factors, language, cultural values, beliefs and ways of living, educational factors, ethno history, kinship and social factors and political and legal factors" (Pereira de Melo, 2013, n.p.). The second part of the model includes the provider working with the patient; it can be broken down into three core concepts: 1) maintenance and preservation; 2) negotiation and accommodation; and, 3) restructuring and patterning. These are illustrated below (Figure 1).

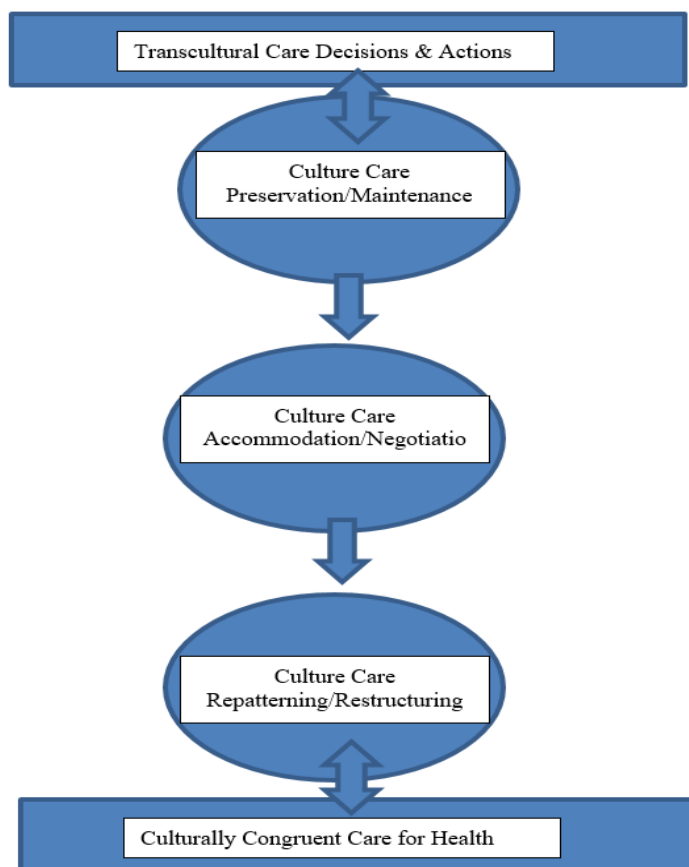


FIGURE 1. Leininger's culture care sunrise model (adapted from Leininger, 1996, p. 75).

Maintenance and Preservation

Cultural preservation occurs through addressing a patient's beliefs prior to suggestions of medical interventions. As providers, this comes from communication with the patient as well as understanding Hispanic beliefs and practices that are currently being utilized. Before implementing any medical interventions, providers must have respect for Hispanic patient's cultural practices, which may include alternative medical interventions such as acupuncture for anxiety or possible pain relief (Albougami, Pounds, & Alotaibi, 2016). This is important because Hispanics typically use alternative treatments for ailments and diseases. Natural remedies that

Hispanics typically use to help lower blood glucose levels are *nopal* (cactus juice) and *savila* (aloe vera) (Coronado, Thompson, Tejeda, & Godina, 2004). An understanding of alternative treatment is important as well as not dismissing patient's beliefs. Adams (2003), study on practitioners' awareness of patients' alternative treatments concluded that not only did providers utilize scare tactics to discourage alternative practice, but such scare tactics led patients to feel less knowledgeable about their disease process, which became a barrier in achieving optimal glucose control. Understanding how to provide culturally competent care is the most important step for providers because, it establishes trust with the patient as well as shows their ability not only to listen but also to understand Hispanics' beliefs.

Negotiation and Accommodation

Once providers know how to provide culturally competent care, cultural negotiation can commence. This includes communication among the patient, family, and provider when deciding on a treatment plan (Albougami et al., 2016). The Hispanic culture emphasizes family understanding and involvement, which is important for providers to understand when communicating with Hispanics. Hu et al.'s (2013) study included type 2 diabetics and their family members, and it established two main themes, one showed Hispanics' negative perception of and barriers to the implementation of insulin therapy. Negotiation can occur through education about the disease process and medication administration. Lifestyle and diet modifications are topics where negotiation between the provider and the patient will need to occur, with an understanding of cultural practices. Osborn et al.'s (2010) descriptive statistical analysis concluded that participants with limited health literacy benefited from enhanced social support to

improve glycemic control. Improved education can transpire through the incorporation of family members.

Restructuring and Patterning

Cultural restructuring; will only occur if there are potentially harmful cultural practices noted by the provider (Albougami et al., 2016). Culture plays an enormous role in diet, and Hispanics rely heavily on a traditional diet and lack portion control. If patients are unable to modify their meal plans, education must transpire to help patients achieve a healthier lifestyle. The latter being vital to the management of type 2 diabetes. Brunk, Taylor, Clark, Williams, and Cox (2017) showed how culturally tailored education helped participants maintain better glucose management. They educated patients about the glycemic load index, exercise, and blood glucose self-monitoring to help them understand how different foods affect glucose levels (Brunk et al., 2017). Hands-on cooking classes were also proven to be beneficial for Hispanic patients with type 2 diabetes. Chapman-Novakofski and Karduck (2005) administered a class titled “Dining with Diabetes.” The class was broken up into three courses, each lasting about two hours. A pre-test and post-test were completed, which measured patient knowledge. This study was able to show an increased understanding of how food affects the body as well as how to cook healthy meals.

Culture restructuring requires effort from both the patient and the provider. The provider needs not only to understand cultural practices, but also needs to know how to suggest alternative options that do not deviate drastically from Hispanics’ normal practices. Hispanics, on the other hand, must be open to change and understanding, not using scare tactics but through becoming knowledgeable about of what poorly managed glucose levels can ultimately do to their quality of

life. Cultural Care Theory (Leininger, 1996) perfectly aligns with what needs to be provided for the Hispanic population with type 2 diabetes.

These three steps: 1) maintenance and preservation, 2) negotiation and accommodation, and 3) restructuring and patterning; provide a framework to guide health care providers in what must be done to provide culturally competent care. Providers must listen and understand as well as include family members in the plan of care. Once a culture is understood, it is easier to provide culturally competent care and education.

Synthesis of Evidence

A literature review was conducted using the databases: PubMed, and EMBASE. To optimize search results, the following keywords were used as search strings: type 2 diabetes AND Hispanics; type 2 diabetes AND cooking classes; type 2 diabetes AND herbal remedies; type 2 diabetes AND health literacy AND Hispanics; type 2 diabetes AND education; Hispanic AND type 2 diabetes AND culture. Using PubMed, 3,495 articles resulted from all search strings; when the results were limited to patients 18 years of age and older with a date range from 2003 to 2018, a total of 1,932 articles were retrieved. Using EMBASE, 1,213 items were retrieved; when the results were limited to patients 18 years of age and older with a date range from 2003 to 2018, a total of 579 articles were retrieved. Results were further limited to patient education, culturally appropriate care, cultural competency, adult Hispanic diabetic patients, and health literacy; after reviewing the articles for relevance, a total of 18 articles were selected for this project.

Culture Tailored Education

Diet Recommendations

Proper education about nutrition was found to play a critical role for Hispanics with type 2 diabetes. Brunk et al. (2017) conducted a four-week phenomenological study with nine Hispanic adults, primarily Spanish-speaking, from a rural community. The first week of the study entailed observation; the following three weeks included the execution of a patient-centered program utilizing self-management for type 2 diabetes in Hispanic patients. There was motivation for the participants to change through increased knowledge, which ultimately helped the Hispanic adults achieve successful glucose management. Brunk et al. (2017) educated participants about foods that contain elevated glucose compared to others. Also, to overcome literacy barriers, they used different educational approaches, including *telenovelas* and bingo games. Approaches that made this program successful were utilizing traditional Hispanic food when teaching as well as educating patients about the glycemic load index. Participants were able to communicate their confusion about which foods were healthy: Strawberries and blueberries were thought to be high glycemic foods; oatmeal, corn, rice, and soda were thought to be low glycemic foods (Brunk et al., 2017). Benavides-Vaello and Brown (2016) conducted an ethnographic grounded study with 12 Hispanic women who had low incomes and lived in a rural community; they examined how culture and food habits were related to type 2 diabetes among these women. The inclusion criteria for this study was a diagnosis of type 2 diabetes for 10 years. For one week, data were obtained through Interviews. The women all agreed that many challenges stood in the way of countering obesity, such as low income, low socioeconomic status, and social expectations. Six themes emerged after this study was completed. One of these

themes was diet, *la dieta*, which means understanding how to make alterations in cooking for example, baking vs. frying, increasing the use of lean meat, and reducing the intake of flour tortillas. Another theme was use the fork; which means that, if you are not using a fork while eating something, it might not be a healthy food choice. Portion control was another theme. Further, in Hispanic cultures, eating for diabetes becomes a family affair; this means that everyone needs not only to understand to disease process but also possess knowledge about how to incorporate healthy living into their everyday lives.

Hispanics who had type 2 diabetes not only lacked an understanding of the disease process but also were not receiving appropriate referrals from nurse practitioners and doctors when necessary. Adams (2003) conducted a phenomenological research study with a purposive sampling of 13 Hispanic women with type 2 diabetes. Six themes emerged from the interviews. One common theme was that in addition to lacking education about diabetes, they lacked an understanding of how to manage glucose levels. Another theme was that the primary care provider did not provide a referral to an endocrinologist or nutritionist; providers also utilized scare tactics during patient instruction (Adams, 2003). I was unable to locate articles with descriptions of how providers educate patients upon a diagnosis of type 2 diabetes or even pre-diabetes.

Grohmann, Espin, and Gucciardi (2017) evaluated 23 patients with diabetes, using a qualitative approach through interviews. Their study showed that, if diabetes educators were incorporated into a primary care practice, patients would experience better outcomes. This study, however, was not conducted with Hispanics participants. Type 2 diabetes truly needs a

multidisciplinary team along with family support to help patients achieve better glucose managements, which ultimately leads to better outcomes.

Patients with type 2 diabetes were successful in learning with hands-on cooking classes. Chapman-Novakofski and Karduck (2005) conducted an experimental study with 239 predominately white women who were either caregivers or patients with type 2 diabetes. The program, titled, 'Dining with Diabetes,' was broken up into three group sessions lasting two hours each. Each session included cooking a main dish, desserts, and side dishes. This study showed the positive impact of knowledge, health beliefs and self-reported behaviors, which was confirmed through knowledge questions that were gathered from a pre-test and post-test before and after the session. Archuleta et al. (2012) conducted a quasi-experimental study of 117 participants with type 2 diabetes from varied socioeconomic and cultural backgrounds. This study included four sessions, with each session lasting three hours; half the time was used for preparing food and the other half for eating, along with group discussions. The consensus was that many people diagnosed with type 2 diabetes found the recommendations given to them to be confusing and difficult to successfully implement (Archuleta et al., 2012). This study did conclude that hands-on cooking activities can improve nutritional intake.

Herbal Remedies

Hispanic culture has strong beliefs about the use of herbal remedies for many ailments. Coronado et al. (2004) conducted a grounded theory study of 42 people; participants either had type 2 diabetes or were family members of a person with diabetes. Four themes emerged when the audiotapes were analyzed. One dealt with beliefs about the treatment of type 2 diabetes. Hispanics believe that natural remedies such as nopal and savila help to lower blood glucose

levels (Coronado et al., 2004). Other herbal remedies used by Hispanics, such as arnica and *agua de violeta* (violet water), are believed to help with inflammation in the feet and poor circulation (Coronado et al., 2004). Healthcare providers must not discount herbal remedies. Many Hispanic patients living along the border in El Paso, Texas, believe in western medicine, including the use of herbal remedies, which Hispanics believe to be beneficial. In fact, many Hispanics do not see any benefit to combining prescribed medications with herbal remedies; and, most patients do not disclose their herbal therapy use to their provider (Poss, Jezewski, & Stuart 2003). Poss et al. (2003) conducted a grounded theory study of 22 Mexican Americans; they used open-ended interviews, which concluded that participants relied on advice from family and friends, rather than from their primary care providers, regarding herbal therapy. with regards to herbal therapy over their primary care providers. Often, patients discontinued prescribed medications if they were taking herbal remedies. Thus, understanding the patients' beliefs is vital.

Health Literacy and Literacy Barriers

There are many Hispanics with type 2 diabetes who not only suffer from literacy barriers but also health literacy barriers. Both types of barriers hinder patients' ability to learn how to manage glucose levels adequately. Osborn et al. (2010) conducted a descriptive statistical analysis of 130 participants with type 2 diabetes at a primary care clinic. The Rapid Estimate of Adult Literacy in Medicine (REALM) was used to assess health literacy. This study concluded that if participants had low health literacy, they could manage glucose levels if they had social support. As Rosal et al. (2011) and Brunk et al. (2017) concluded, Hispanics with type 2 diabetes benefited from education that consisted of pictures of foods, games such as bingo, and modeling cooking, as well as the use of telenovelas, all of which helped with glucose management. White

et al. (2013) completed a cross-sectional observational study of 149 participants to assess physician trust and health literacy as well as diabetes self-care activities. Further research is required to help provide a correlation between physician trust and health literacy. The conclusion from White et al. (2013), is that, patients with lower literacy levels resulted in better health outcomes and improved physician trust. Sand-Jecklin, Daniels, and Lucke-Wold (2017) completed a descriptive study of 115 registered nurses. These researchers integrated a screening health literacy tool, and; into patients' plans of care during hospital admission. Bedside nurses completed the health literacy tool; the instrument was found to be acceptable and useful. However, further research is needed to determine whether the patient understands the information provided (Sand-Jecklin et al., 2017). No studies were conducted about health literacy assessments in clinical settings. The *Functional Health Literacy for Adults* test and the REALM both take a considerable amount of time not only to be administered but also to be tabulated, so administering them is not convenient in a busy environment (Sand-Jecklin et al., 2017). Health literacy, although important, is difficult and time consuming not only to measure but also be able to identify what patients understand. I did not find any studies conducted that utilized a health literacy tool in the primary care setting, the inability to locate many studies is why this study is important to research.

Myths

Myths about the development of disease processes can be attributed to cultural factors, but they also derive from a lack of proper education and knowledge base. Fear arises from a lack of knowledge, which can lead to non-compliance with medical recommendations in the Hispanic population when it comes to medical recommendations. Hu et al. (2013) conducted a

phenomenological study of 43 type 2 diabetics and their family members. This study's duration was eight weeks, and three themes emerged. The first two themes that emerged were a negative perception of insulin therapy and barriers to the initiation of insulin therapy. Many participants had seen family members with diabetes, who, once they started insulin therapy, went blind or passes away shortly afterwards; this made them believe that taking insulin leads to loss of vision or even death (Adams, 2003; Hu et al., 2013; Poss et al., 2003). Upon further investigation, some Hispanics compared a diagnosis of type 2 diabetes to cancer, the human immune deficiency virus, and cardiac disease; associating type 2 diabetes with a death sentence (Adams, 2003; Coronado et al., 2004). Dependence on insulin therapy was another concern for Hispanics; they believed that insulin therapy, like narcotics caused addiction (Poss et al., 2003). The overall issue that emerged from this study was that Hispanics lack an understanding of type 2 diabetes, both the disease process and the treatment plan.

Call for Change

With culturally appropriate diabetes education, Hispanic patients with type 2 diabetes can adequately manage glucose levels to minimize secondary complications. Metghalchi et al. (2008) completed a prospective cohort of 34 Hispanic participants with type 2 diabetes. They provided a comprehensive diabetes education plan with a focus on glucose control. The results concluded that there were improvements in HgbA1C levels, along with improved cholesterol levels, after three months of education when compared to the baseline (Metghalchi et al., 2008). Given proper instruction, diabetics have the ability not only to make appropriate changes but to maintain better glycemic control. Philis-Tsimikas et al. (2011) and Rosal et al. (2011) concluded that culturally tailored diabetes programs do, in fact, improve glucose levels; however, there

have been no follow up studies to determine whether any of them are sustainable. Brown et al. (2005) conducted an experimental study of 216 participants divided into two groups: 114 in a *compressed* group, and 102 in the *experimental* group. A prescription of DSME benefited the patient, and it was found that it is necessary to be ordered in terms of “dosages” throughout the patient’s life. This can help patients better manage glucose levels appropriately. This dosage, which was found by Brown et al, (2005) to be beneficial, includes providers adding a frequency of education that the patient requires (Brown et al., 2005). The guidelines for management of type 2 diabetes includes when DSME should be prescribed.

METHODOLOGY

The purpose of this project was to use an online asynchronous educational webinar to increase the Texas Nurse Practitioner Association’s providers’ knowledge of teaching strategies and culturally appropriate education for Hispanic patients with type 2 diabetes.

Design

The intervention for this project used a PowerPoint format. A quantitative pre-test and post-test were used to evaluate the effectiveness and satisfaction of a brief asynchronous online webinar with a focus on providing culturally appropriate patient education for Hispanics with type 2 diabetes. These tests aimed to gather data about the knowledge acquired through the webinar. The pre-test gathered sociodemographic information; the post-test determined the level of satisfaction with the webinar.

Setting

This project was conducted online, through the Texas Nurse Practitioner Association listserv. Texas has many Hispanic patients with type 2 diabetes. The diagnosis of type 2 diabetes

among Hispanics was 12.2% compared to 10.2% of non-Hispanic whites (THHS, 2015). Nurse Practitioners' provide care for patients across Texas, including a significant proportion of Hispanic type 2 diabetic patients. In 2014, there were 10,936 practicing Nurse Practitioners in Texas (Texas Nurse Practitioner Association, 2018). The Texas Nurse Practitioner Association's focus is to help "advance, support and promote the role of nurse practitioner's" as well as to "promote accessible quality health care provided by nurse practitioner's" (Texas Nurse Practitioner Association, 2018, n.p.). The Texas Nurse Practitioner Association's listserv is estimated to include approximately 4,500 nurse practitioner, and nurse practitioner students in Texas (S. Roberts, personal communication, February 23, 2018). Members of this association practice across all of Texas and have different practice backgrounds (e.g., family practice, psychological health, pediatrics, women's health, acute care, adult-geriatric).

Sample

A recruitment e-mail was sent to potential participants by the Texas Nurse Practitioner Association's listserv administrator. I did not have access to the listserv members' e-mail addresses or names. All members of the Texas Nurse Practitioner Association were invited to participate. Participation was voluntary; I did not reject any subject for the study, although participants could voluntarily withdraw. All participants met inclusion criteria. No ongoing follow up was included in this study. The inclusion criteria for this project were that participants must: a) be a nurse practitioner; b) currently be in practice; and, c) care for Hispanics with type 2 diabetes. The Texas Nurse Practitioner Association estimates that the listserv contains approximately 4,500 nurse practitioner, and nurse practitioner students (S. Roberts, personal communication, February 23, 2018). It was estimated that around two-thirds of the sample size

would be practicing nurse practitioners. The expected response rate was 10%; therefore, the target sample would be 300 nurse practitioners, with a minimum of 30 expected responses.

Intervention

The intervention was an online, asynchronous, educational webinar, that took approximately 15 to 20 minutes to complete. The format was a voiceover PowerPoint. The webinar reviewed the essential elements of culturally competent education and included the following:

- i. *Background* — This section described the Hispanic population in Texas and the incidence of type 2 diabetes among this group.
- ii. *Diagnosis of type 2 diabetes* — This section explained various tests to confirm a diagnosis of type 2 diabetes.
- iii. *Role of Nurse Practitioner* — This section described the role of Texas Nurse Practitioners in treating Hispanics at risk of developing type 2 diabetes, and the purpose of the intervention is to improve quality of life and understanding of the disease.
- iv. *The Importance of Cultural Communication* — This section described cultural communication barriers, which included language barriers and understanding critical cultural differences.
- v. *Cultural Misconceptions About type 2 diabetes* — This section described common misconceptions including how Hispanics view the diagnosis of type 2 diabetes as a death sentence.

- vi. *Cultural Practices and Nutritional Barriers among Hispanics* — Hispanic culture believes that being *gordito* is healthy. The incidence of obesity is higher in this population due to its cooking practices and lack of physical activity.
- vii. *Cultural Views of Insulin Therapy* — Hispanics have a knowledge gap and lack of understanding of type 2 diabetes, including a misunderstanding of the benefits of insulin therapy.
- viii. *Evidence-based Practice Guidelines* — The ADA and AACE/ACE guidelines are used to inform nurse practitioners of recommendations regarding care for type 2 diabetic patients.
- ix. *Appropriate Referrals*
 - a. *Diabetes Self-Management Education* — DSME is vital to the education of type 2 diabetics. DSME needs to be provided upon diagnosis of type 2 diabetes, annually, when complicating factors arise, and with a transition in care.
- x. *Resources* — This section gave examples of resources to help professionals manage patients with type 2 diabetes.

Appendix B provides a detailed outline of the webinar's content. The content was approved by a nurse practitioner with extensive experience caring for Hispanic adults with type 2 diabetes.

Data Collection

A quantitative pre-test and post-test were used to evaluate the effectiveness of and satisfaction with the webinar. The pre-test and post-test were constructed using the Qualtrics software system via the license of the University of Arizona's College of Nursing. The surveys were stored on University of Arizona servers. No identifiable data were collected, and data were

to be kept for one year. The two phases of data collection included the: pre-test and post-test. The pre-test was followed by a brief 15 to 20-minute webinar on cultural education for Hispanics with type 2 diabetes and ended with a post-test. The anonymous data were managed and stored on an Excel spreadsheet.

Pre-test

The pre-test (Appendix C) was an anonymous online quantitative survey, created using Qualtrics and it took approximately five minutes to complete. The evaluation targeted the practitioners' sociodemographic data and knowledge regarding recommendations for management of type 2 diabetes with a focus on appropriate cultural care for Hispanic patients. The knowledge-based questions contained information on the following topics: a) EBR for patients with type 2 diabetes; and, b) literature reviews of cultural care for Hispanics with type 2 diabetes.

- i. Socio-demographic questions* about participants (for example, years of clinical experience)
- ii. Knowledge-based questions:*
 - a. Incidence/Prevalence of type 2 diabetes
 - b. Misconceptions/Myths
 - c. Nutrition
 - d. Herbal remedies
 - e. Diabetes education

Post-test

The post-test (Appendix D) was an anonymous online quantitative survey that was created using Qualtrics. The survey took approximately five minutes to complete. The post-test included knowledge and satisfaction questions regarding the webinar. The knowledge-based questions contained information on the following topics: a) EBR for patients with type 2 diabetes; and, b) literature reviews of cultural care for Hispanics with type 2 diabetes. The post-test included questions regarding satisfaction with the webinar, which included delivery, method, content, length, and clarity. A note text box was also included for additional suggestions or recommendations.

- i. *Knowledge-based questions:*
 - a. Incidence/prevalence of type 2 diabetes
 - b. Misconceptions/myths
 - c. Nutrition
 - d. Herbal remedies
 - e. Diabetes education
- ii. *Content/delivery of presentation* — Allowed participants to give feedback regarding satisfaction with the webinar.

Data Collection Process

The listserv administrator of the Texas Nurse Practitioner Association distributed a Welcome e-mail (Appendix E) during Week 1 of the study. This e-mail was a disclosure form that included the purpose of the study, its risks and, benefits, the voluntary nature of participation, and three links. Clicking on these links denoted a consent to participate. The three-

links consisted of the following: a) the anonymous online pre-test; b) the online asynchronous webinar; and, c) the online anonymous post-test. The pre-test, webinar, and post-test took 25 to 30 minutes to complete. The listserv administrator sent a reminder e-mail (Appendix F) during week 2, and the study closed at the end of week 3. Figure 2, below, shows a timeline of completion of the project.

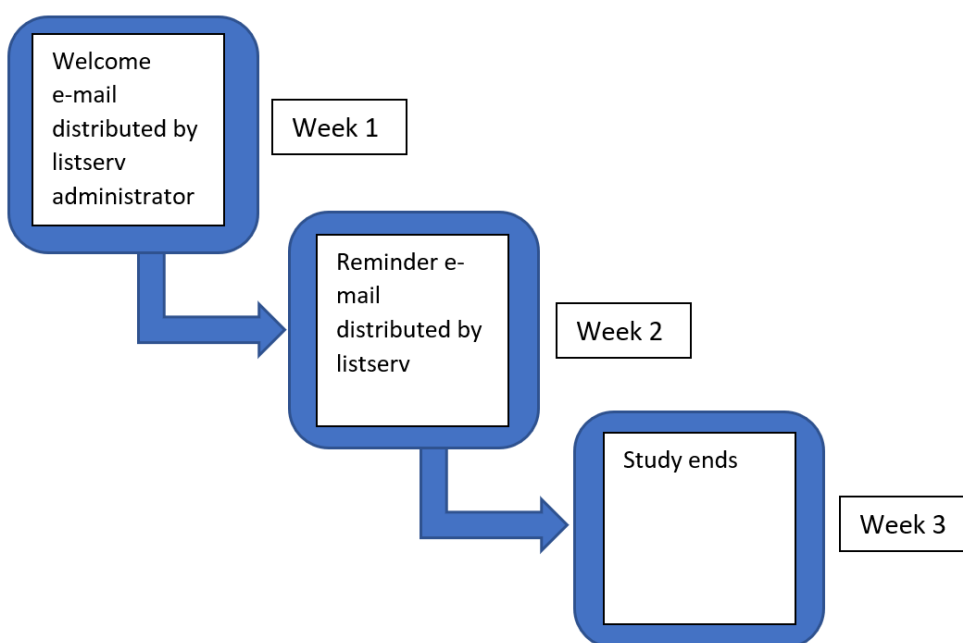


FIGURE 2. Timeline of project.

Analysis

The data were gathered and managed using quantitative methods. Data were then managed using Excel and interpreted using descriptive statistical analysis. No personal identifying information was collected. The information was password protected, locked and secured by the investigator. The sections that were analyzed were broken down into three different categories: socio-demographics, knowledge and practice, and satisfaction. Descriptive

statistics were selected for each of these categories. The proportion of correct knowledge responses was compared between the pre-test and post-tests. Open responses were summarized. The benefit from participation in this study was the opportunity for Texas Nurse Practitioner Association members to improve their knowledge of culturally competent care for the treatment of Hispanics with type 2 diabetes.

Dissemination

An executive summary was provided to the Texas Nurse Practitioner Associations listserv administrator for distribution. A summary of the findings and evidence-based recommendations were included. A link to the webinar was also included to promote additional access for future members in addition to a note of thanks for the participation of members.

Ethical Considerations

Three core principles were maintained throughout this study: autonomy, beneficence, and justice. Before implementation, this study was reviewed by the University of Arizona's Institutional Review Board (Appendix A), and approval was obtained by the Texas Nurse Practitioner Association (Appendix G). No identifiable data were collected; only aggregate data was shared with the organization. The data were kept locked, encrypted, and password protected. Possible risks for participants who completed this survey included perceived lack of cultural sensitivity or feelings of incompetency in previous patient care settings. Loss of confidentiality was not expected, given the anonymous design of the surveys. Ways to mitigate these risks included ensuring that the disclosure form gave adequate information about the purpose of the project, its risks and benefits, and the opportunity to voluntarily participate as well as to opt out at any time. Another way to minimize risks was by maintaining anonymity as well as by making

sure that the data collected did not contain any identifiers. Information was collected and stored in an encrypted and password protected Qualtrics database. Online surveys were completed by members who chose to participate. There was no foreseeable research-related injury.

Autonomy

Autonomy was maintained in this study because participation was voluntary, and participants had the option to withdraw at any time. Autonomy, also referred to as respect for people; was ensured by giving participants the opportunity to choose whether they wanted to participate in the study (Owonikoko, 2013). There was minimal risk in the completion of this study.

Beneficence

The purpose of this study was to improve outcomes for Hispanic patients with type 2 diabetes. *Beneficence* is a core principle that states that no harm should come to a participant of the study (Owonikoko, 2013). Participants may benefit from an increase in knowledge, which in turn may benefit the health of their Hispanic patients with type 2 diabetes. There was no noticeable harm to nurse practitioners who anonymously answered survey questions.

Justice

Justice was maintained by the distribution of surveys through the listserv with no restrictions, apart from the inclusion criteria that the participants must: a) be nurse practitioners; b) currently be in practice; and, c) care for Hispanics with type 2 diabetes. To maintain justice, all participants in the study were treated fairly (Owonikoko, 2013). All Texas Nurse Practitioner Association members were invited to participate. All participants in this study had the same amount of time to complete the study as well as the same webinar and surveys to complete.

RESULTS

Members of the Texas Nurse Practitioner Association were taught new strategies for educating Hispanic patients with type 2 diabetes. The providers were taught by an online asynchronous educational webinar. There were 45 providers from the Texas Nurse Practitioner Association who completed the pre-test, and 30 providers completed the post-test, all participants met inclusion criteria.

Sample Demographic Characteristics

The characteristics of the sample's participants included 58% who specialized in family practice, 48% had more than 10 years of experience, which are mutually exclusive. Participants were from all over Texas: 34% practice in Central Texas, around 32% practice in Northeast Texas, and 20% practice in rural regions. Some 20% of nurse practitioners who participated in the survey practice in rural regions. Table 1 outlines the demographic data of study participants.

TABLE 1. *Demographic characteristics of study participants (n=45).*

Characteristics	N	%
<i>Years as a practitioner</i>		
○ <1 year	4	9
○ 1-5 years	13	31
○ 6-10 years	5	12
○ >10 years	20	48
<i>Specialty</i>		
○ Family Practice	27	58
○ Women's Health	5	11
○ Other	5	11
○ Psych Mental Health	3	6
○ Acute Care	3	6
○ Adult Geriatric	3	6
○ Pediatrics	1	2
<i>Geographic location</i>		
○ Central Texas	14	34
○ Northeast Texas	13	32
○ Southeast Texas	8	20
○ West Texas	5	12
○ Panhandle	1	2
○ Rio Grande Valley/Coastal Bend	0	0

TABLE 1 – *Continued*

Characteristics	N	%
<i>Effective Spanish speaker</i>		
○ No	22	52
○ Yes	20	48
<i>Bilingual interpreters available</i>		
○ Yes	32	76
○ No	10	24
<i>Number of Hispanic diabetic patients seen weekly</i>		
○ <5 patients	11	27
○ 5-10 patients	13	32
○ 11-19 patients	8	19
○ >20 patients	9	22
<i>Percentage newly diagnosed with diabetes</i>		
○ None	5	12
○ Few (1-25%)	29	71
○ Some (26-50%)	4	10
○ Many (51-75%)	2	5
○ Most (76-99%)	1	2
○ All (100%)	0	0

Access to and use of interpreters from participants in this study were limited. Some 52% of participants stated they were not effective Spanish speakers, and only 76% had access to an interpreter. All participants cared for diabetic patients. Most practitioners (73%) saw at least five diabetic patients per week, with less than 2-25% of patients being newly diagnosed diabetics.

Knowledge and Practice

Data collected through pre-test and post-test questionnaires were used to establish and evaluate baseline cultural knowledge and to compare with knowledge learned post intervention. The study assessed the practitioners' knowledge of the following categories of information regarding the Hispanic population: population, disparities, cultural norms, cultural perception, treatment knowledge, diet, alternative medicine, rapport with health care practitioners, and referral knowledge. Figure 3 shows a comparison of pre-test and post-test results.

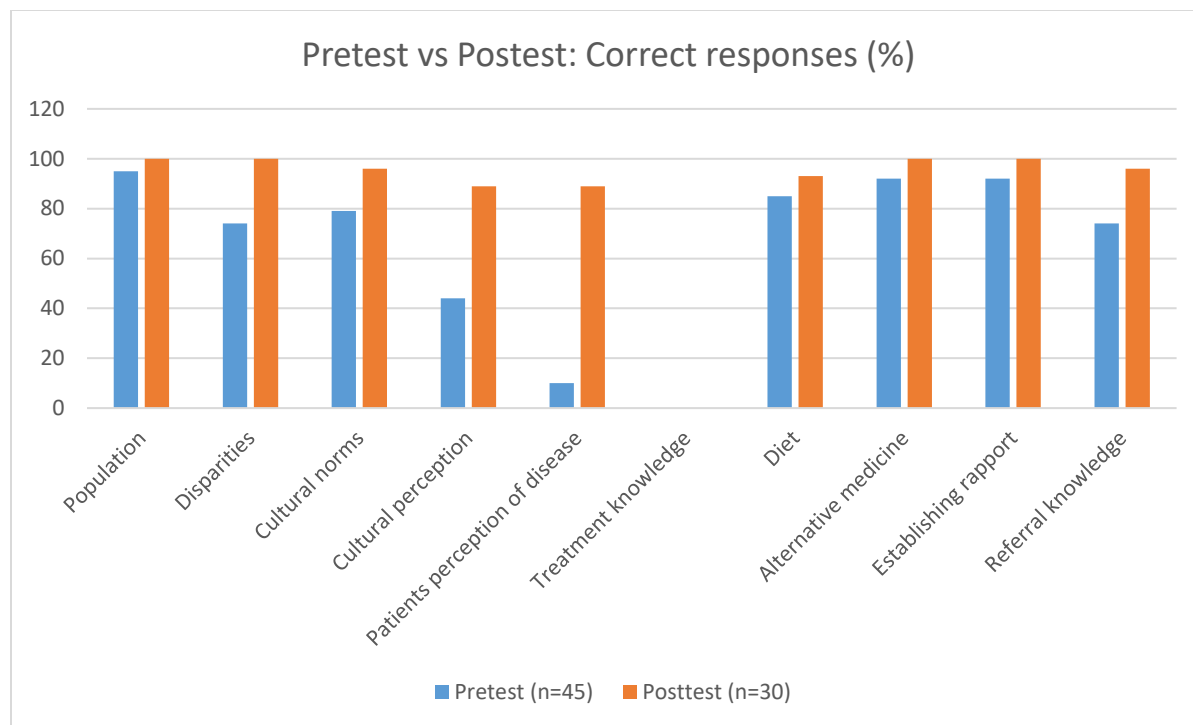


FIGURE 3. Knowledge pre-test and post-test comparison.

When asked about the population and the number of Hispanics in Texas many providers answered correctly that the Hispanic population is increasing. When inquiring about health disparities in the Hispanic population after viewing the webinar, providers answered correctly that Hispanics are more likely to be obese than non-Hispanic whites. In Hispanic culture, being overweight is associated with good health, which, prior to the webinar 79% of providers answered correctly. The next question related to cultural perception, which refers to beliefs that are held by a target population. In the case of this study, the belief is that type 2 diabetes can be caused by fright, anger, or depression; prior to the webinar, 56% of providers answered questions about cultural perception correctly. Diet is a huge component for the management of type 2 diabetes, and culture impacts food choices. Hispanics struggle with diet due to social pressures to eat a large quantity of traditional foods that are high in fat and calories, which after viewing the

webinar 93% of practitioners answered the question about social pressures and food consumption correctly. Another question dealt with establishing rapport. To establish rapport with Hispanic patients, a practitioner must be *simpatico*, have *respeto*, and remember to maintain the patients *modestia*. No providers answered the treatment knowledge category question; an error discovered in the Qualtrics question format created a technical problem. The last category of questioning was referral knowledge, which includes diabetes self-management education. Only 74% of providers answered correctly that it is appropriate to prescribe diabetes self-management education for patients upon diagnosis, annually, and with complicating factors or with a transition in care with type 2 diabetes.

Participation Satisfaction

Participant satisfaction with content and delivery of the webinar was assessed using Likert scale data responses (Table 2). The scores were reported in percentiles, with 100% being the highest. Many participants (93%) reported gaining new knowledge applicable to the care of Hispanic diabetic patients. Most also agreed or strongly agreed that the intervention was presented effectively (93%), was understandable (96%), and would enhance their practice (93%).

TABLE 2. *Content delivery scores.*

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %
The duration of the webinar was adequate for the material covered.	0	0	0	52	48
After watching this webinar, I gained new knowledge applicable to the care of Hispanic diabetic patients.	0	0	7	56	37
The subject matter was presented effectively.	0	7	0	45	48
Topics were relevant to diabetes education.	0	0	0	41	59
Information presented was understandable.	0	4	0	37	59
Information from this webinar will enhance my practice.	0	0	7	48	45

Participants also had the opportunity to provide open responses, which are summarized with the following. There were some concerns regarding the sound quality and speed of voiceover from five (16%) participants. One participant noted concerns regarding the mental health perspective of the patient as well as the patient's willingness to follow a regime. One participant voiced concerns about patients' unwillingness to take medications along with socioeconomic barriers. Finally, there was also concern (n=2) that the questionnaire may have been leading questions because of options such as all the above.

DISCUSSION

This study evaluated an online asynchronous webinar to improve provider knowledge for Texas Hispanics with type 2 diabetes using a pre-test and post-test format. The key finding was that this webinar was effective in improving knowledge and would enhance the practice of health care providers. The purpose of this project was to help educate providers about culturally appropriate education for Hispanics with type 2 diabetes. This topic is relevant in clinical practice due in part to the increase in Hispanics and increased incidence of type 2 diabetes in this population. Currently, Hispanics consist of 39% of the Texas population and this number is increasing (DHHS, 2017). Even though Hispanics make up the most significant percentage of the population, they are still considered a minority group and are disproportionately affected by diabetes. The Hispanic population diagnosed with type 2 diabetes was around 12% compared to 10% in non-Hispanic whites (THHS, 2015). Hispanics also have an increased mortality rate and end-organ complications when compared to non-Hispanic Caucasians (Clifford, McCalman, Bainbridge, & Tsey, 2015). There are currently no standardized guidelines to help Hispanics manage type 2 diabetes. Competent cultural care is a necessity because patient's ability to

implement lifestyle modifications is vital in helping to prevent long-term complications of poorly managed glucose levels. With that, nurse practitioners are crucial in helping Hispanics to manage their glucose levels and, in turn, their quality of life.

Sample

Participants in this study were from the Texas Nurse Practitioner Association and included nurse practitioners from all over Texas who care for Hispanic diabetic patients. Forty-five providers completed the pre-test, and all participants met inclusion criteria. The sample characteristics included 58% of participants who are family practitioners, with a range of specialties including women's health, mental health, acute care, adult geriatric and pediatrics. Around 48% of participants had over 10 years of experience, and 31% had between one and five years of experience. Each of the experience levels were represented by respondents.

Many participants were from central and northeast Texas, with around 30% respondents from both parts of Texas. There were no participants from the Rio Grande Valley/Coastal Bend, and 12% of providers were from West Texas. Although the survey was distributed to all nurse practitioners in the Texas Nurse Practitioner Association listserv, the participants were not a complete representation of all of nurse practitioners in Texas. The intended target audience of this project was providers in the border region; however, this did not make up a large percentage of respondents. This was important since Hispanics are more predominant in these regions, and cultural education is vital to help with the patients' quality of life.

Some 71% of providers listed having 1-25% of their patients newly diagnosed with diabetes, and 10% of providers reported having 26-50% of their patients newly diagnosed with diabetes every week. The increase in prevalence of this disease demonstrates why it is important

to educate providers on how to provide culturally competent care to the Hispanic population, increased cultural knowledge will benefit providers as well as patients.

Demographic data were only available for the pre-test participants. Because of this, we were unable to evaluate the location from which correct and incorrect responses came from. This also left us unable to compare regions.

In addition to cultural education, translators are also vital for educating Hispanics with type 2 diabetes. And 48% of providers who participated in the survey were effective Spanish speakers. Additionally, 76% had access to an interpreter. The survey also showed that 52% of nurse practitioners were not effective Spanish communicators and 22% did not have access to an interpreter. According to Cersosimo and Musi (2011), language barriers affect quality of care. This study found that English-proficient Hispanic/Latino patients with chronic diseases were more likely to report receiving advice from their provider regarding physical activity or diet compared to those not proficient in English. Many services are rarely offered in Spanish even though many Hispanics prefer conversations to be in their native language (Cersosimo & Musi, 2011). Detz et al. (2014) also noted better participation in foot care when Hispanic patients had education provided in their primary language (i.e., Spanish). What makes this concerning is that type 2 diabetes education heavily relies on changes in lifestyle modifications. Communication is imperative for managing a disease that requires complex education and modifications to a patient's lifestyle.

Knowledge and Practice

The educational intervention resulted in an increase in practitioners' knowledge regarding health disparities, and culture norms among Hispanics. Hispanics are more likely to be obese

than non-Hispanic whites. Most (74%) of the providers correctly answered a question pertaining to this pre-webinar, and 100% answered correctly post-webinar. Hispanic cultural norms include the association of better health with being overweight and, 79% of practitioners correctly answered the question about cultural norms pre-webinar. And 96% answered correctly post-webinar. The educational intervention also improved practitioners' knowledge on diet. Answers to this question improved from 85% to 93% after, watching the webinar. Hispanic culture has social pressure to eat a large quantity of traditional foods, which are high in fat and calories, and almost every meal includes tortillas. Benavides-Vaello and Brown's (2016) study highlighted the need to balance between diabetes guidelines and respect for traditional Mexican- American food, to help with the prioritization of cultural values. Evans et al. (2011) also showed that Latino parents needed knowledge about healthy eating and food shopping practices, which ultimately helped them understand that being overweight is not healthy and how to make better food choices. Nutrition education through hands-on cooking also has a positive impact on nutrition and food intake (Archuleta et al., 2012). In the future, more thorough nutritional explanations and grocery shopping pamphlets could be included in surveys for providers to give to patients.

The educational intervention also showed improvements in practitioner's knowledge regarding the cultural perception of Hispanics with type 2 diabetes, with correct responses ranging from 44% (pre-test) to 89% (post-test). Culture perception is the belief held by the target population. Many, Hispanics believe that type 2 diabetes can be caused by fright, anger, or depression. The educational intervention also showed improvement of the providers' understanding for patient perception of diseases process, with an increase of correct answer percentage from 10% (pre-test) to 89% (post-test). Many Hispanics believe that a diagnosis of

type 2 diabetes can be comparable to being diagnosed with cancer, cardiac disease or HIV. Cultural beliefs and disease knowledge can both be addressed through proper education. Rosal et al. (2011) conducted a randomized control trial that determined that culturally tailored interventions along with literacy sensitive interventions can improve diabetes management in low-income Latinos however, sustainability was not measured. The alternative medicine category received 92% correct answers pre-test and 100% post-test. Many providers answered correctly that Hispanics avoid disclosing their use of herbal remedies to providers. Poss et al., (2003) study concluded that many Hispanic patients with type 2 diabetes did not disclose use of herbal therapy to providers in fear of judgement. The webinar showed improvement in referral knowledge from 74% (pre-webinar) to 96% (post-webinar), with providers answering correctly that it is appropriate to refer type 2 diabetic patient for diabetes self-management upon diagnosis, annually, with complicating factors, or with a transition in care. Brown et al. (2005) showed a “dosage” effect with diabetes self-management education, which showed that with an increased number of classes patients had better outcomes. Diabetes is a lifelong disease that needs lifestyle modifications; therefore, continuous education is beneficial for a patient with type 2 diabetes.

Satisfaction

Overall, participants were satisfied with this educational intervention. Most agreed or strongly agreed that the intervention was presented effectively (93%), was understandable (96%), and would enhance their practice 93%. Many participants 93% reported gaining new knowledge applicable to the care of Hispanic diabetic patients. However, there were concerns regarding audio from 4% of participants, even though, prior to distribution of survey, the link was tested multiple times by presenters as well as by the project chair without evidence of

potential issues. The Panopto presentation was chosen as a format, rather than a voice-over PowerPoint to prevent potential issues with software versions, as experienced by other students conducting similar types of projects. It is possible that the internet browser or internet connection may have contributed to the audio issues. Kennedy and Vargus (2001) evaluated online studies, and although they provided to be beneficial, the authors concluded that online surveys require a way to move data at faster rates and more developed software. Further testing with a range of browsers and recommendations for optimal viewing may be noted.

for optimal viewing may be noted.

Strengths and Limitations

One strength from this study is the increase in providers' knowledge regarding culturally appropriate education for Hispanics with type 2 diabetes. An additional strength is the convenience and low cost associated with the use of an online survey. Practitioners demonstrated improvement from the pre-test to the post-test questionnaire, suggesting the effectiveness of this format. Accessibility of format was also a strength due to the ability of health care providers to take the survey whenever free. This survey was distributed through the Texas Nurse Practitioner Association listserv, which covers the entire state of Texas and includes a wide range of specialties. Limitations were that this survey only included nurse practitioners who were members of the Texas Nurse Practitioner Association. There was also no follow-up survey, so it is unclear whether anyone retained any knowledge. Also, the study did not assess actual patient outcomes or changes in practice.

Since the pre-test and post-test were not linked, it was difficult to determine individual improvement. It was difficult to determine improvement because there was not an even number

of participants from the pre-test to the post-test. This number skews the results on the percentage of correct answers obtained.

Upon review, the project chair and lead investigator determined that the questions were labeled correctly. Also prior to distribution of the survey, the links were reevaluated. After distribution of links and survey, one question was missing two answer selections, one of which the correct response was. The topic for this question was insulin therapy. Therefore, treatment knowledge learned was unable to be evaluated.

The Texas Nurse Practitioner Association's listserv is estimated to include approximately 4,500 nurse practitioners' and nurse practitioner students in Texas (S. Roberts, personal communication, February 23, 2018). Some 45% of nurse practitioners participated in the pre-test and 30 nurse practitioners completed the post-test. Once the Institutional Review Board (IRB) (Appendix A) from the University of Arizona gave approval for the project to commence, the Texas Nurse Practitioner Association was distributing another survey. The Texas Nurse Practitioner Association was able to distribute the surveys on November 16. One potential problem was that the date it was distributed was the weekend before Thanksgiving; the reminder e-mail was also distributed on a Friday. The poor response rate could have come from both factors listed above, if; distributed on a week that was not during a holiday break, the survey could have had more participants.

Conclusions and Recommendations

An online, asynchronous webinar to improve provider knowledge and culturally appropriate care for practitioners treating Texas Hispanics with type 2 diabetes was effective in improving the knowledge of practitioners and would enhance their practice. Many participants

reported this format to be of adequate duration, relevant to practice, and effective. Survey respondents, both rural and urban, from a range of specialties, from across Texas were able to participate.

One concern in the study was the finding that availability and use of translators is limited. What makes this concerning is that type 2 diabetes education heavily relies on changes in diet along with patients' ability to incorporate physical activity into their everyday lives. Communication is imperative for managing a disease that requires complex education and modifications of a patient's lifestyle. This needs to be explored however, barriers can come from cost as well as availability of staff.

Technical challenges to this study were identified, including concerns of varying playback speeds for some participants and a two-missing answer choice on Qualtrics. Recommendations for the future would be to test on multiple platforms/web-browsers.

A possible improvement to this study would be to narrow down this survey for a smaller provider population in El Paso, Texas, in a clinic that serves a large Spanish speaking adult population. Although a self-paced webinar is helpful to gain more responses, future activities would include an in person educational session with pre and post-tests. With a smaller distribution, the provider can evaluate the HgbA1C of patients with type 2 diabetes prior to taking an educational session and three months later to evaluate if patients are showing improvement. With more time, patients could be included as survey participants to determine whether they are able to effectively understand the diabetes education given to them by providers.

Additionally, only limited content could be included into a brief educational intervention. On expanding this project, the introductory webinar could be included along with supplementary videos that expand more on each topic. This could include diet and nutrition, cultural norms and referral information. Included in the end could be pamphlets to give to patients in English and Spanish.

Nurse practitioners have an important role in providing culturally appropriate care to improve patient outcomes. There needs to be further research to evaluate the best way to educate providers and effectiveness in real-world clinic settings over time to evaluate the impact on patient outcomes. For Hispanics with type 2 diabetes, better outcomes depend on nurse practitioners' implementation of effective, culturally appropriate care. Providers are at the forefront in helping this minority population have a better quality of life. This study demonstrated improvement in health care providers' cultural knowledge concerning Hispanics with type 2 diabetes and can serve as the foundation for helping providers to implement appropriate care for this population. This project and further research can help to implement guidelines to help manage glucose levels for Hispanics with type 2 diabetes.

APPENDIX A:
THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL
LETTER



Human Subjects
Protection Program

1618 E. Helen St.
P.O. Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
<http://hgw.arizona.edu/compliance/home>

Date: October 29, 2018
Principal Investigator: Gabriela Diaz
Protocol Number: 1810033895
Protocol Title: A Brief Educational Intervention to Improve Culturally Appropriate Care in Hispanic Adults with Type 2 Diabetes Living in Texas

Determination: Approved
Expiration Date: October 24, 2023

Documents Reviewed Concurrently:

Data Collection Tools: *Posttest.docx*
Data Collection Tools: *Pretest.docx*
HSPP Forms/Correspondence: *Application for Human Research- Diaz 9-27.pdf*
HSPP Forms/Correspondence: *Confirmation for Scientific Review and Department Review.pdf*
HSPP Forms/Correspondence: *Diaz Appendix Waiver Consent 2018.pdf*
HSPP Forms/Correspondence: *Diaz List of Research Personnel 2018.pdf*
Informed Consent/PHI Forms: *Recruitment posting ADMIN.docx*
Informed Consent/PHI Forms: *Recruitment posting ADMIN.pdf*
Other: *References.docx*
Other Approvals and Authorizations: *Advisor Confirmation Email.pdf*
Other Approvals and Authorizations: *TNP Permission Letter.pdf*
Participant Material: *Outline for Webinar.docx*
Recruitment Material: *Recruitment posting ADMIN.docx*
Recruitment Material: *Reminder Posting ADMIN.docx*

Regulatory Determinations/Comments:

- ♦ The project is not federally funded or supported and has been deemed to be no more than minimal risk.
 - ♦ The project listed is required to update the HSPP on the status of the research in 5 years. A reminder notice will be sent 60 days prior to the expiration noted to submit a 'Project Update' form.
-

This project has been reviewed and approved by an IRB Chair or designee.

- ♦ The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).
- ♦ All research procedures should be conducted according to the approved protocol and the policies and guidance of the IRB.
- ♦ The Principal Investigator should notify the IRB immediately of any proposed changes that affect the protocol and report any unanticipated problems involving risks to participants or others. Please refer to Guidance Investigators Responsibility after IRB Approval, Reporting Local Information and Minimal Risk or Exempt Research.

- All documents referenced in this submission have been reviewed and approved. Documents are filed with the HSPP Office.

APPENDIX B:
OUTLINE FOR WEBINAR

Outline for Webinar

Slide 1: Title

Slide 2: Objectives

Slide 3: Background

- Percentage of the United States (U.S.)/Texas population that are Hispanic-
There is an increasing amount of the population who are Hispanic. In the U.S. one in every six people are Hispanic, and by 2035 that number is projected to increase to one in four people (CDC, 2017). In Texas, 39.1% of the population are Hispanic (United States Census Bureau, n.d.).
- The Incidence of type 2 diabetes in Hispanics-
The prevalence of type 2 diabetes is increasing throughout the U.S. with significant health disparities. About 50% of Hispanics will develop type 2 diabetes over their lifetime (CDC, 2017). According to the National Health Interview Survey, around 7% of non-Hispanic whites have type 2 diabetes compared to 11% of Hispanics (Cusi & Ocampo, 2011).
- The Scope of Problem in Texas-
Texas, a border state to Mexico, is home to many Hispanic adults with type 2 diabetes. In 2010, Texas population consisted of about 37.6% Hispanics compared to 16.3% in the U.S. (Texas Department of State Health Services, 2013). Texas is home to many Hispanics, in 2015 there were around 10% non-Hispanic whites with type 2 diabetes compared to about 12% of the Hispanic population (THHS, 2015). In the U.S., Hispanics constitute a minority group that is rapidly increasing (Benavides-Baello & Brown, 2016).

Slide 4: Diagnosis of type 2 diabetes-

- The most common laboratory tests for diagnosis of type 2 diabetes are Fasting Plasma Glucose (FPG) and Hemoglobin A1C (HgbA1C). One exam is not definitive, and there needs to be two different blood tests to confirm diagnosis of type 2 diabetes. An alternate diagnosis for type 2 diabetes is if the patient displays the classic diabetic symptoms, i.e. hyperglycemia or hyperglycemic crisis along with an elevated random plasma glucose (Brashers, Jones, & Huether, 2014).

Slide 5: Role of the Nurse Practitioner-

- Nurse Practitioners, are healthcare providers that provide and promote an emphasis on health promotion, disease prevention, and health education (AANP, 2018). Patients with type 2 diabetes could benefit from receiving preventative education from a Nurse Practitioner, and, be referred to other appropriate providers when necessary i.e. nutritionist, dietitian, Diabetes-Self Management Education etc.

Slide 6: The Importance of Cultural Communication-

- Culture, which includes beliefs and values, is an important factor for the management of type 2 diabetes. Providing social care includes an understanding of language, cultural values beliefs, religion, economic factors, and educational factors (Nursing Theory, 2016). These factors influence the patient's ability to manage any disease process. The Hispanic population is increasing, making culture care vital Some critical terms to understand include: *simpatico* (being kind), *personalismo* (being friendly), *respecto* (maintaining respect) and *modestia* (respecting patients' modesty). It is important to be mindful of culture and to establish trust as well as being warm, empathetic and listen to each patient, especially when there are cultural differences.
- Language and Health Literacy Barriers-
Daily self-care management is necessary in type 2 diabetes due to the complexity of the disease process which requires patients to have the ability to incorporate guidelines into their everyday life (Friis, Vind, Simmons, & Maindal, 2016). To properly manage Diabetes, patients need to understand how to implement their plan of care. This comes from a language and health literacy barriers.

Slide 7: Cultural Misconceptions about type 2 diabetes-

- Language, customs, beliefs, and values play a role in culture, and understanding Hispanic culture is necessary to be able to provide culturally competent care (Clark & Utz, 2014). Hispanics believe a diagnosis of type 2 diabetes to be comparable to that of cancer, human immunodeficiency virus, or cardiac disease (Adams, 2003; Coronado, Thompson, Tejeda & Godina, 2004). For the Hispanic culture development of chronic diseases are more of a concern than dying (Adams, 2003; Coronado et al., 2004).

Slide 8: Cultural Practices and Nutrition barriers among Hispanics-

- Obesity- Traditional Hispanic food is not only high in fat but high in calories and carbohydrates; this contributes to unhealthy choices in everyday living. Conventional Hispanic food makes obesity a considerable concern for the Hispanic population. Obesity prevalence is 1.2 times higher in the Hispanic population when compared to the non-Hispanic whites (U.S. Department of Health & Human Services, 2017).
- Nutrition-Religion plays a role in food preparations; in the typical Hispanic household meals are prepared by the matriarch—these meals tend to be high in carbohydrates and sugars (Gonzalez-Zacarias et al., 2016). Hispanic cooking has a high carbohydrate high-calorie diet. Hispanics also face social pressures with eating and have difficulty with portion control.
- Physical Activity- Many reasons contribute to inactivity, including socioeconomics factors. According to the Centers for Disease Control and Prevention guidelines there were 23% of non-Hispanic adults who met these guidelines compared to 16% of Hispanic adults (CDC, 2014).

Slide 9: Use of Herbs

- Hispanic culture has strong beliefs about utilization of herbal remedies for many ailments. Hispanics believe natural remedies such as *nopal* (cactus juice) and *savila* (aloe vera) helped to lower blood glucose levels (Coronado et al., 2004). The danger comes from the fact that many Hispanics do not see any benefit in combining prescribed medications with herbal remedies, and on top of this, most patents do not disclose their herbal therapy use to their provider (Poss et al., 2003).

Slide 10: Cultural Views on Insulin Therapy-

- Insulin Therapy -Numerous Hispanics have a negative connotation regarding insulin therapy. Many have seen family members who had Diabetes, and once they were started on insulin therapy, they went blind or passed away shortly afterwards; this made them believe insulin meant loss of vision or even death (Hu, Amirehsani, Wallace & Letvak, 2013; Adams, 2003; Poss et al., 2003). Dependence was another concern for Hispanics with insulin therapy; they believed insulin therapy to cause addiction like a narcotic (Poss

et al., 2003). The overall issue that emerged from this study was Hispanics having a lack of understanding of type 2 diabetes, both about the disease process and the treatment plan.

- Knowledge Gap-Many Hispanics do not understand the implications of being diagnosed with type 2 diabetes (Adams, 2003; Hu et al., 2013). Education is important and does not only need to be understood but also needs to be constant because diabetes requires many lifestyle modifications.

Slide 11: Evidence-Based Practice Guidelines-

- The two practice guidelines that will be reviewed regarding recommendations of type 2 diabetes will be the ADA and AACE/ACE.

Slide 12: Appropriate Referrals

- Appropriate referrals need to be given for patients with type 2 diabetes. One of these referrals includes diabetes self-management education.
- Diabetes Self-Management Education (DSME)
DSME needs to be made upon the diagnosis of type 2 diabetes, annually, when complicating factors arise, and with a transition in care.

Slide 13 Resources

- Examples of resources that will help professionals care for Hispanic patients with type 2 diabetes.

Slide 14: References

APPENDIX C:
PRE-TEST

Pre-test

Sociodemographics

1. How many years in practice as a Nurse Practitioner?
 - ☐ <1 year
 - ☐ 1-5 years
 - ☐ 6-10 years
 - ☐ >10 years
2. What is your specialty? (Select all that apply)
 - ☐ Family Practice
 - ☐ Psych Mental Health
 - ☐ Pediatrics
 - ☐ Women's Health
 - ☐ Acute Care
 - ☐ Adult Geriatric
 - ☐ Other
3. What part of Texas do you practice in?
 - ☐ Panhandle
 - ☐ West Texas
 - ☐ Central Texas
 - ☐ Rio Grande Valley/Coastal Bend
 - ☐ Southeast Texas
 - ☐ Northeast Texas
4. Are you practicing in a rural area? (Rural population <50,000 people)
 - ☐ Yes
 - ☐ No
5. Are you able to effectively communicate with Spanish speaking patients?
 - ☐ Yes
 - ☐ No
6. Do you have bilingual interpreters on site?
 - ☐ Yes
 - ☐ No
7. How many Hispanic Diabetic patients do you see weekly?
 - ☐ <5 patients
 - ☐ 5-10 patients
 - ☐ 11-19 patients
 - ☐ >20 patients

8. What percentage of your patients per week are newly diagnosed with type 2 diabetes?

- ☐ None
- ☐ Few (1-25%)
- ☐ Some (26-50%)
- ☐ Many (51-75%)
- ☐ Most (76-99%)
- ☐ All (100%)

Knowledge and Practice

1. The number of Hispanics in Texas are:

- ☐ Increasing *
- ☐ Staying the same
- ☐ Declining

2. Hispanics are more likely to be obese than non-Hispanic whites?

- ☐ True *
- ☐ False

3. Hispanics associate being overweight *gordito* with being healthy?

- ☐ True *
- ☐ False

4. Hispanics have moved away from thinking that type 2 diabetes can be caused by fright, anger or depression.

- ☐ True
- ☐ False *

5. Hispanics associate a diagnosis of type 2 diabetes with which of the following:

- ☐ Cancer
- ☐ Human Immunodeficiency Virus
- ☐ Cardiac Disease
- ☐ None of the above
- ☐ All the above *

6. Hispanics believe insulin therapy can cause which of the following:

- ☐ Damage to the kidneys
- ☐ Imply treatment failure
- ☐ To cause more harm than good
- ☐ None of the above
- ☐ All the above *

7. Regarding type 2 diabetes education for Hispanics, diet is considered difficult because:
- Hispanic culture has social pressures to eat a large quantity of traditional foods
 - Traditional Hispanic food is high in fat and very often is fried
 - Traditional Hispanic food is high in calories
 - Traditional Hispanic food utilizes a lot of flour tortillas
 - All the above *
8. In general Hispanic patients who use herbal remedies, do not feel the need to share this information with their healthcare provider?
- True *
 - False
9. Which of the following is important to build trust with the patient as the provider?
- Be kind *simpatica*
 - Be friendly *personalismo*
 - Have respect *respeto*
 - Remember about the patient's modesty *modestia*
 - All the above *
10. When is it appropriate to refer for Diabetes Self-Management Education?
- Upon diagnosis of type 2 diabetes
 - Annually once diagnosed with type 2 diabetes
 - When complicating factors arise with type 2 diabetes
 - A type 2 diabetic patient who has a transition in care
 - All the above *

APPENDIX D:
POST-TEST

Post-test

Knowledge and Practice

1. The number of Hispanics in Texas are:
 - ☐ Increasing *
 - ☐ Staying the same
 - ☐ Declining
2. Hispanics are more likely to be obese than non-Hispanic whites?
 - ☐ True *
 - ☐ False
3. Hispanics associate being overweight *gordito* with being healthy?
 - ☐ True *
 - ☐ False
4. Hispanics have moved away from thinking that type 2 diabetes can be caused by fright, anger or depression.
 - ☐ True
 - ☐ False *
5. Hispanics associate a diagnosis of type 2 Diabetes with which of the following:
 - ☐ Cancer
 - ☐ Human Immunodeficiency Virus
 - ☐ Cardiac Disease
 - ☐ None of the above
 - ☐ All the above *
6. Hispanics believe insulin therapy can cause which of the following:
 - ☐ damage to the kidneys
 - ☐ imply treatment failure
 - ☐ to cause more harm than good
 - ☐ None of the above
 - ☐ All the above *
7. Regarding type 2 diabetes education for Hispanics, diet is considered difficult because:
 - ☐ Hispanic culture has social pressures to eat a large quantity of traditional foods
 - ☐ Traditional Hispanic food is high in fat and very often is fried
 - ☐ Traditional Hispanic food is high in calories
 - ☐ Traditional Hispanic food utilizes a lot of flour tortillas
 - ☐ All the above *

8. In general Hispanic patients who use herbal remedies, do not feel the need to share this information with their healthcare provider?

- ☐ True *
- ☐ False

9. Which of the following is important to build trust with the patient as the provider?

- ☐ Be kind *simpatica*
- ☐ Be friendly *personalismo*
- ☐ Have respect *respeto*
- ☐ Remember about the patient's modesty *modestia*
- ☐ All the above *

10. When is it appropriate to refer for Diabetes Self-Management Education?

- ☐ Upon diagnosis of type 2 diabetes
- ☐ Annually once diagnosed with type 2 diabetes
- ☐ When complicating factors arise with type 2 diabetes
- ☐ A type 2 diabetic patient who has a transition in care
- ☐ All the above *

Satisfaction:

The following questions can be answered as

Strongly disagree, disagree, neutral, agree, or strongly agree

1. The duration of the webinar was adequate for material covered.

- ☐ Strongly Disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly Agree

2. After watching this webinar, I gained new knowledge applicable to the care of Hispanic diabetic patients.

- ☐ Strongly Disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly Agree

3. The subject matter was presented effectively.
 - ☐ Strongly Disagree
 - ☐ Disagree
 - ☐ Neutral
 - ☐ Agree
 - ☐ Strongly Agree
4. Topics were relevant to Diabetes education.
 - ☐ Strongly Disagree
 - ☐ Disagree
 - ☐ Neutral
 - ☐ Agree
 - ☐ Strongly Agree
5. Information presented was understandable.
 - ☐ Strongly Disagree
 - ☐ Disagree
 - ☐ Neutral
 - ☐ Agree
 - ☐ Strongly Agree
6. Information from this webinar will enhance my practice.
 - ☐ Strongly Disagree
 - ☐ Disagree
 - ☐ Neutral
 - ☐ Agree
 - ☐ Strongly Agree

Typed Response:

What would you add to the presentation to make it more effective?

What would you take away from the presentation to make it more effective?

What barriers do you face in managing your type 2 diabetic patients?

APPENDIX E:
WELCOME E-MAIL

Welcome e-mail

A Brief Educational Intervention to Improve Culturally Appropriate Care in Hispanic Adults with
Type 2 Diabetes Living in Texas

Gabriela C. Diaz RN, BSN

Greetings,

As a member of the Texas Nurse Practitioners Association, you have been invited to participate in a project to evaluate the effectiveness of an online asynchronous webinar, to increase knowledge about teaching strategies, and provide culturally appropriate education for Hispanics in Texas who have Type 2 Diabetes.

As you may have experienced in practice, we have many Hispanic adults with Type 2 Diabetes. Across Texas, Hispanics are disproportionately affected by Diabetes. Providing culturally competent care is important for Diabetes control and improved patient outcomes.

Collectively this project should take approximately 25-30 minutes to complete, which will include:

1. Short, anonymous online pre-test (Click here for pre-test) - approximately 5 minutes
2. Asynchronous online webinar (**Click here for webinar**) - approximately 15 minutes and
3. Short, anonymous online post-test (Click here for post-test)- approximately 5 minutes

The surveys will be open for three weeks. Your participation as a frontline provider is very important. Based on feedback from you, I will be tailoring this educational intervention and make it available widely for your organization members. In addition, the data obtained may be used for future research.

Participation in this study is voluntary, and you may withdraw at any time from the project. In addition, you may skip any question that you choose not to answer. The information you provide is anonymous.

An Institutional Review Board responsible for human subjects' research at The University of Arizona reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

Your feedback is important. If you have any questions about this project, please contact me Gabriela Diaz, RN, BSN at gcdiaz1@email.arizona.edu. You may also contact the doctoral chair, Christy Pacheco, DNP, FNP-BC at christy.pacheco@arizona.edu or the University of Arizona Human Rights Protection Program at 520-626-6721 or online at <http://rgw.arizona.edu/compliance/human-subjects-protection-program>.

Thank you for your time and participation in this project.

Gabriela Diaz, RN, BSN

APPENDIX F:
REMINDER E-MAIL

Reminder e-mail

A Brief Educational Intervention to Improve Culturally Appropriate Care in Hispanic Adults with Type 2 Diabetes Living in Texas

Gabriela C. Diaz RN, BSN

Greetings,

This is a friendly reminder that as a member of the Texas Nurse Practitioners Association, you have been invited to participate in a project to evaluate the effectiveness of an online asynchronous webinar, to increase knowledge about teaching strategies, and provide culturally appropriate education for Hispanics in Texas who have Type 2 Diabetes.

If you have already participated, thank you.

If you would still like to participate, then there is still time. As a nurse in El Paso, I have been very concerned with the impact of Diabetes and related complications on our patients. This project is to be conducted in partial fulfillment of my Doctor of Nursing Practice Nurse Practitioner degree.

As you may have experienced in practice, we have many Hispanic adults with Type 2 Diabetes. Across Texas, Hispanics are disproportionately affected by Diabetes. Providing culturally competent care is important for Diabetes control and improved patient outcomes.

Collectively this project should take approximately 25-30 minutes to complete, which will include:

1. Short, anonymous online pre-test (Click here for pre-test) - approximately 5 minutes
2. Asynchronous online webinar (**Click here for webinar**) - approximately 15 minutes and
3. Short, anonymous online post-test (Click here for post-test)- approximately 5 minutes

The surveys will be open for three weeks. Your participation as a frontline provider is very important. Based on feedback from you, I will be tailoring this educational intervention and make it available widely for your organization members. In addition, the data obtained may be used for future research.

Participation in this study is voluntary, and you may withdraw at any time from the project. In addition, you may skip any question that you choose not to answer.

The information you provide is anonymous

Your feedback is important. If you have any questions about this project, please contact me Gabriela Diaz, RN, BSN at gcdiaz1@email.arizona.edu. You may also contact the doctoral chair, Christy Pacheco, DNP, FNP-BC at christy.pacheco@arizona.edu or the University of Arizona Human Rights Protection Program at 520-626-6721 or online at <http://rgw.arizona.edu/compliance/human-subjects-protection-program>.

Thank you for your time and participation in this project.

Gabriela Diaz, RN, BSN

APPENDIX G:
LETTER OF INTENTION



April 19, 2018

University of Arizona
1305 N Martin Avenue
Tucson, Arizona 85721

To Whom It May Concern:

This letter is to certify that the Texas Nurse Practitioner Association grants permission for Gabriela Diaz, a student from the University of Arizona, to conduct a project titled, "A Brief Educational Intervention to Improve Culturally Appropriate Care in Hispanic Adults with Type 2 Diabetes Living in Texas" with our members. This project is for fulfillment of a Doctor of Nursing Practice Requirement.

Texas Nurse Practitioners (TNP) will allow a survey to be sent to our membership, which will last three weeks. A disclosure e-mail and links to the anonymous pre-test, post-test, and asynchronous presentation will be forwarded to the membership by TNP staff twice during the three-week period.

We understand that this project will be reviewed by the University of Arizona Institutional Review Board prior to implementation. Once the project is completed, aggregate results will be provided to the Texas Nurse Practitioner in which they may choose to publish in their quarterly publication *TNP Pulse*.

Sincerely,

A handwritten signature in black ink that reads "Emily Eastin, CEO". The signature is written in a cursive, flowing style.

Emily S. Eastin, CEO
Texas Nurse Practitioners

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